

Public health issue evaluation of electronic cigarettes



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Protecting the next generation from adverse effects of E-cigarettes

Executive Summary

Cigarette smoking has declined among middle and high school students in recent years. About 2 of every 100 middle school students reported that they smoked cigarettes, which has decreased from 4.3% in 2011. Similarly, nearly 8 of every 100 students reported that they smoked cigarettes, which is a decrease from 15.8% in 2011 (Center of Disease Control and Prevention, 2018). While this is great, the fact of the matter is that these numbers look good because there is something else on the market that is attracting the youth. During the same period, the use of electronic cigarettes has been on the rise among middle and high school students. About 3 of every 100 middle school students and 12 of every 100 high school students reported use of electronic cigarettes (CDC, 2018). According to CDC, “electronic cigarettes or E-cigarettes are devices that typically deliver nicotine, flavorings, and other additives to users through an inhaled aerosol, are a rapidly emerging trend, and are especially popular among youth and young adults” (CDC, 2018). This is concerning as research shows that “the use of tobacco in any form by young adults is not safe” (CDC, 2018).

This policy brief provides an overview of dangers of smoking, identifies the need for intervention among young adults, and offers recommendations to decrease the prevalence of electronic cigarettes.

The major finding in this policy brief are that

1. Smoking, especially electronic cigarettes are a growing health crisis in the United States as youth are turning towards electronic cigarettes (CDC, 2018).
2. If smoking continues at the current rate among youth in this country, “5. 6 million of today’s Americans younger than 18 will die from a smoke-related illness” (CDC, 2018).
3. There is a significant need for improved evidence based research on the newer and more advanced models of e-cigarettes.
4. There is a significant need for state, and federal government involvement secondary to the increasing prevalence in the usage of these devices.

This policy brief assesses alternative options and recommends steps for decreasing prevalence of e-cigarettes. If the recommendations are successful, it will prevent millions of youth deaths as well as lower the cost of health care drastically.

Introduction and Background

Summary

Electronic cigarettes are a cause for major public health concern. According to 2016 Surgeon General’s report, they are the most common used products among middle and high school students. (Kowitt, Osman, Ranney, & Goldstein, 2018).

1. Adverse effects of smoking

Smoking is harmful for an individual's physical and mental health. Studies show that smoking leads to adverse health effects. " One-half of people who smoke will die of a tobacco-related illness, shortening their lives by an average of 10 years" (Halladay, Ripley-Moffitt, Gupta, O'Meara, & Goldstein, 2015). Smoking can affect various organs as tobacco is a known cause of about 25 diseases including but not limited to lung cancer, cardiovascular disease, cerebrovascular disease and chronic obstructive airways disease, as well as tumors of the mouth, larynx, esophagus, lip and bladder (World Health Organization, 2001).

2. E-Cigarettes a cause for concern

E-cigarettes are a major cause of concern secondary to rapidly increasing prevalence among the youth. E-cigarette products are changing rapidly for evidence based research to keep up and findings from older research might not apply to new products. " There has been a rapid market penetration of e-cigarettes despite many unanswered questions about their safety, efficacy for harm reduction and cessation, and total impact on public health" (Grana, Benowitz, & Glantz, 2014). E-cigarettes are marketed as healthier alternatives to tobacco smoking, and to circumvent smoke-free laws by enabling users to use them anywhere despite " claims of efficacy for quitting smoking being unsupported by the scientific evidence to date" (Grana, Benowitz, & Glantz, 2014).

II. Overview of Government Regulations related to the issue

Summary

While the government has taken similar steps to regulate e-cigarettes as other tobacco products, it has failed to place harsher restriction on them despite the seriousness of the effects of e-cigarettes on youth population.

1. Overview: Government Regulation and E-cigarettes

The excessive use of electronic cigarettes has not gone unnoticed by the federal government as there are “ clear signs that youth use of electronic cigarettes has reached an epidemic proportion” (U. S Food & Drug Administration, 2018). Taking this into account, the federal government is working to control the sale of e-cigarettes to minors. They are more vigilant in terms of fining retailers for selling to minors. They have made the effort to conduct checks to make sure that the retailers are complying with the federal laws. To protect the public further, “ they finalized a rule in 2016 that regulated e-cigarettes as tobacco products” (U. S Food & Drug Administration, 2018). This regulation allows the government to keep an eye on distribution and promotion of e-cigarettes.

2. State regulation and E-cigarettes

While federal regulations allow e-cigarettes to be only sold to individuals age 18 or older, most states have added little or no regulations of their own despite the increasing prevalence of e-cigarettes among youth population. Less than a third of the states include e-cigarettes under the state law definition of Tobacco Product. Less than 20% of states have a special tax for e-cigarettes. Less than half of the states have special packages that have warning labels on e-cigarettes. Less than half the states require a special

permit for sale of e-cigarettes and less than 10 percent have increased the legal age for buying e-cigarettes to 21 (Public Health Law Center, 2018).

III. Evaluation Criteria

Summary

For purpose of this policy brief, there are 5 primary criteria that will be used to evaluate the merits of each of the alternative interventions presented for decreasing e-cigarette prevalence.

1. Epidemiological standpoint

The concern is that e-cigarettes are being taken too lightly and are being used by youth in excess amount. The purpose of the intervention will be to decrease the prevalence of e-cigarettes. This criterion will focus on whether the desired result was achieved and if it did, was there a causal relationship between the intervention and the decreased prevalence?

2. Economic standpoint

Smoking results in detrimental health effects including but not limited to chronic diseases. Treating rather than preventing a chronic disease results in an increase in cost of health care. This criterion will focus on whether the intervention has resulted in lower health care cost. Another thing to consider is how will the intervention affect the population financially?

3. Political standpoint

The intervention will be using the power of the government to decrease the prevalence of e-cigarettes among youth. This criterion will focus on whether

the government is using its power wrongfully to limit the autonomy of the individual. Is the government abusing its power? Is it justified under the concept of beneficence?

4. Ethical standpoint

The objective of the intervention will be to decrease the prevalence of e-cigarettes. This criterion will focus on whether it is ethical to control what an individual can consume. Is the intervention affecting the whole population to the same extent? Is it benefitting some while having a negative impact on others?

5. Legal standpoint

The goal of the intervention is to limit the use of e-cigarettes. This impinges on individual rights to some extent. This criterion will focus on whether the intervention is affecting the core values of freedom, fairness, free enterprise, and autonomy. Is it benefiting the health of the individual more than compromising their freedom?

IV. Alternatives

In this policy brief, three alternative interventions are considered to decrease the prevalence of e-cigarettes.

1. Status Quo

The first alternative is to leave the current regulation in place. This alternative is based on the idea that the regulations by state and federal government already in place are effective. It implies that the current prevalence rate of e-cigarettes in the youth population is not concerning, and

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that no detrimental health effects will be seen in the future secondary to the use of e-cigarettes.

2. Federal regulation of increasing the restriction age

The second alternative is based on the premise that the current prevalence rate of e-cigarettes in the youth population is concerning. This requires the FDA to increase the age limit of all tobacco products to the age of 21. This alternative asks the federal government to take the responsibility of increasing the nationwide age limit as opposed to leaving it up to each state legislation.

3. State regulation of specialized e-cigarette tax

The third alternative, like the second one, is based on the premise that the current prevalence rate of e-cigarettes in the youth population is concerning. The prevalence is concerning due to the detrimental health effects of smoking. This alternative asks the state government to implement a special tax on e-cigarettes, therefore, increasing the price of the tobacco product being sold to minors.

Analysis

Description: E-cigarettes have a high prevalence among youth population. Research suggests that adolescents who use electronic cigarettes, are more likely to initiate using cigarettes or other combustible tobacco products than adolescents who do not use e-cigarettes (Kowitt, Osman, Ranney, Heck, & Goldstein, 2018).

1. Status quo

Argument for:

Legislative standpoint : In a previous proposed tobacco legislation in 1998, tobacco industry described the legislation as “ trampling of liberal ideas” and “ huge defeat of individual freedom” (Cohen, Milio, Rozier, Ference, Ashley, &Goldstein, 2000). This favors the status quo as the intervention would increase the age of restriction therefore limiting ‘ rights’ of those under 21.

Political standpoint: The tobacco industry accused the congress of “ infringing on personal liberty” when they implemented a tax increase on tobacco (Cohen et al, 2000). This favors the status quo as well since it is against the idea of raising taxes as that makes it difficult for individuals to obtain the products in question.

Argument against:

Economic standpoint: Smoking results in various chronic diseases which increase the health care cost by billions of dollars. Chronic Disease Cost Calculator provides chronic disease estimates which highlight possible areas of cost saving achievable through prevention and interventions (Trogon et al, 2015). Decreasing the prevalence of e-cigarettes will lower the number of chronic diseases, therefore, lowering the cost of health care.

Epidemiological Standpoint : About 3 of every 100 middle school students and 12 of every 100 high school students reported use of electronic cigarettes (CDC, 2018). The prevalence of e-cigarettes in youth population is extremely high. From an epidemiological standpoint, it stands to reason that

this should be lowered as smoking has high health risks associated with it (WHO, 2001).

Ethical Standpoint: Among young people, short-term consequences of smoking include respiratory and non-respiratory effects while long term consequence affect physical performance, endurance as well as increase the risk of cancers (CDC, 2018). While tobacco industry might be right about interventions impinging on individual's autonomy, it stands to reason that the concept of beneficence is more important in this instance as intervention will prevent millions from detrimental health effects.

Net Assessment: Considering the need for decreasing prevalence of e-cigarettes as well as the resulting lower health care costs, morbidity and mortality, this option does not seem suitable.

2. Federal regulation of increasing the age restriction to 21

Argument for

Political: " Raising the minimum age of legal access to tobacco products may reduce smoking initiation and save lives" (Kowitt, Schmidt, Myers &Goldstein, 2017). Government wants its constituents to be healthy and happy. Intervention that increases the age limit would result in decreased prevalence of e-cigarettes which will result in decreased morbidity and mortality (CDC, 2018).

Epidemiological: The goal of this intervention is to decrease the prevalence of e-cigarettes in youth population. Raising the age limit to 21 will decrease the chances of a retailer selling e-cigarettes to a minor. This will have a

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positive impact on the health of youth population as smoking is regarded as a major risk factor in the development of lung cancer, which is the “ main cause of cancer deaths in men and women in the United States and the world” (Saha, Bhalla, Whayne, & Gairola, 2007).

Ethical: The decreased prevalence secondary to intervention will result in lower detrimental health effects of smoking. Tobacco is a known or probable cause of about 25 diseases (WHO, 2001). Implementing an intervention such as raising the national age restriction to 21 will decrease the prevalence of e-cigarettes, therefore, saving millions of lives.

Economical: Smoking is responsible for various diseases including but not limited to lung cancer, cardiovascular disease, cerebrovascular disease, and chronic obstructive airways disease, as well as tumors of the mouth, larynx, esophagus, lip and bladder (WHO, 2001). The presence of multiple chronic conditions in the same individual has profound implications for healthcare costs and utilization (Sambamoorthi, Tan, & Deb, 2015).

Arguments against:

Legislative standpoint: Tobacco industry believes that stricter legislation against smoking are affecting the constitutional rights of the public. In a previous proposed tobacco legislation in 1998, tobacco industry described the legislation as “ trampling of liberal ideas” and “ huge defeat of individual freedom” (Cohen, Milio, Rozier, Ference, Ashley, &Goldstein, 2000). This argument implies that this intervention will take rights away from individuals who smoke tobacco products.

Net Assessment: Considering the goal of decreasing prevalence of e-cigarettes as well as the resulting lower health care costs, morbidity and mortality, this option seems suitable.

3. State regulation of specialized e-cigarette tax

Arguments against: Proponents of tobacco industry will argue that increasing the tax will lead to illicit trade and related organized crime. The argument is against this intervention despite research showing that countries with the highest rates of smuggling are not those with the highest levels of tobacco taxes (Smith, Savell, & Gilmore, 2012).

Arguments for: This intervention is supported by ethical, economic, political, and epidemiological standpoint. Studies show that one way to decrease the youth interest in e-cigarettes is through increasing taxes. “ Increased taxes are a highly effective measure for reducing smoking among youth, young adults, and persons of low socioeconomic status” (Bader, Boisclair, & Ferrence, 2011). This will result in decreased prevalence, which aligns with the goal of the intervention. Decreased prevalence of e-cigarettes would lower the incidence and prevalence of chronic diseases, which will lower health care costs, morbidity and mortality.

Net Assessment: The intervention gives results that are effective as it will save lives and lower health care costs. This intervention seems suitable.

Final Recommendation

Senator Chuck Schumer should mobilize a joint commission of federal, state and academic experts to:

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- 1) Review and analyze the prevalence of e-cigarettes among youth population
- 2) Review and analyze the effects of smoking on physical and mental health of youth population
- 3) Review the current research on benefits of decreasing the prevalence of e-cigarettes.
- 4) Analyze the effects of decreasing prevalence of e-cigarettes on chronic diseases, health care costs, morbidity, and mortality.
- 5) Develop and conduct research to better understand the effects of newly marketed e-cigarettes.
- 6) Consider regulations on both state and federal level and analyze the combined effect of both on prevalence of e-cigarettes.

The public, health care personnel and government personnel will find this recommendation to be well thought out and effective. It will lower health care costs as well as decrease morbidity and mortality in the youth population.

Limitations

Implementation of stricter federal and state regulation would result in lower prevalence of e-cigarettes as well as decreased morbidity and mortality.

Despite the favorable outcome, there are limitations, irrespective of which options is selected. The two limitation that stand above all are the following:

1. The effect of the intervention on adult smokers

Adults are using e-cigarettes as a mode of quitting combustible cigarettes. They are turning toward e-cigarettes as they are cheaper and erroneously believed to be a method for quitting cigarettes. This has resulted in lower use of combustible cigarettes. While most research shows that e-cigarette claims of efficacy for quitting smoking are so far unsupported by the scientific evidence to date, there are some studies that show that “ long-term use of e-cigarettes is associated with a higher rate of quitting smoking” (Zhuang, Cummins, & Sun, 2016). Implementation of the tax increase policy and the resultant increase in prices of e-cigarette could turn these adults towards combustible cigarettes.

2. Lack of research

There are various types of e-cigarettes as this product is constantly changing and developing in the current market to meet the growing demand from the youth population. While there is research that shows the detrimental effects of e-cigarettes on youth population, there is a concern that findings from studies of older products may not be relevant to the assessment of newer products that could “ potentially be safer and more effective as nicotine delivery devices” (Grana, Benowitz, & Glantz, 2014).

Conclusion

Smoking is detrimental to health and by the 2020's or early 2030's, smoking is expected to cause 10. 9% of all deaths in developing countries and 17. 7% of those in developed countries (Halladay, Ripley-Moffitt, Gupta, O'Meara, & Goldstein, 2015). Regardless of the intervention used, the bottom line is that

the use of e-cigarettes is unsafe for kids, teens and young adults. Young adults who use e-cigarettes are more likely to smoke combustible cigarettes in the future (CDC, 2018).

Given the seriousness of this health hazard, the status quo is unsuitable and an intervention must be implemented. Either federal regulation, which will increase the age restriction to 21 or state regulation, which will levy special taxes on e-cigarettes. These interventions would be effective in decreasing the prevalence of e-cigarette use. These interventions will apply to all individuals, with no exceptions, that are residing in the U. S. The effect of both regulations implemented simultaneously would result in the best outcome with decreased prevalence of e-cigarettes as well as lowered morbidity, mortality and health care costs.

It is humbly requested that Senator Chuck Schumer, using his political contacts, aid in implementing this intervention at the state and federal level.

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